NYC Environmental Protection

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Commissioner

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Friday, November 09, 2012

Mr. Robert Elburn, P.E.
Regional Water Engineer
New York State Department of
Environmental Conservation
Division of Water, Region 2
47-40 21st Street - 1st Floor
Long Island City, New York 11101-5407

Re: Report of Non-Compliance Event for Hurricane Sandy
ITEM No: 5219

Dear Mr. Elburn:
The following is a report of the non-compliance events for NYCDEP due to Hurricane Sandy.

LOCATION: Citywide
RECEIVING WATERBODY: Citywide
EVENT TYPE: Various

START DATE: 10/29/2012
ENDING DATE: Various

EVENT TYPE: Raw Sewage Bypass Mixed with CSO
CITYWIDE AMOUNT: approximately 561.9 MG

EVENT TYPE: Secondary Treatment Reduction
CITYWIDE AMOUNT: approximately 805.5 MG

CAUSE OF EVENT:
Due to severe flooding and power outages related to Hurricane Sandy, which occurred on October 29, 2012 to October 30, 2012, several DEP wastewater treatment plants and pump stations had non-compliance events such as bypasses and/or secondary treatment reductions. The attached report has specific details by location. DEP may add additional information as the recovery from Hurricane Sandy and the subsequent Nor'easter on November 7, 2012 continues.

ACTION TAKEN TO ELIMINATE AND PREVENT
See attached report for specific details by location.

HOW WAS INCIDENT DISCOVERED?
The incidents were discovered by personnel on duty.

REPORT TO D.E.C. (NEW YORK CITY) 10/29/2012 AT 8:24 PM
FOR INQUIRY CONTACT: Keith Cataldo, Tel: (718) 595-5012

Sincerely,

Vincent Sapienza, P.E.
Deputy Commissioner

c: Doughlas McKenna, Chief of Water Compliance, USEPA
Chris Boyd, Assistant Commissioner, NYCDOHMH
Phil De Gaetao, Acting Administrator, IEC

File /Petito /Spangel /LaGrotta /Hammerman /Basant /Carrio /Fragias /Paradis /Pianelli /Loncar /Volgende /McGregor /Laudando /Deur /Cataldo /Tam /Luke /Rozelman /Yulinsky /Deutsch /Levine /Ruderman

Report of Non-Compliance Events for Hurricane Sandy

Description of the bypass, upset, or other incident and its cause:

Starting on Monday, October 29, 2012, the operations of many of the New York City Department of Environmental Protection (DEP) Wastewater Treatment Plants (WWTPs) and wastewater pumping stations were severely impacted by Hurricane Sandy. This hurricane, with winds of up to approximately 90 MPH, brought with it a storm surge never before seen in the City. Battery Park in lower Manhattan recorded a historic 14-foot tide. The storm surge caused widespread power outages throughout the City. Certain WWTPs needed to be evacuated for health and safety reasons when the level of flooding became dangerously high. As detailed below, the widespread power outages caused many of DEP's pump stations to bypass resulting in the unintentional diversion of wastewater around parts of the WWTPs. In addition, due to damage to the WWTPs from the storm and electrical outages, a number of the WWTPs were unable to provide the level of treatment required by their SPDES permits. Hurricane Sandy also impeded DEP's ability to collect and/or deliver samples in accordance with DEP's permits because of factors beyond the reasonable control of DEP. The details relating to specific sampling excursions will be included with the Discharge Monitoring Reports (DMRs) for the individual plants. With respect to the Rockaway WWTP, there are ongoing service disruptions and we will continue to provide additional information as it becomes available.

The following narrative provides further details on the causes of the non-compliance events and the steps taken to mitigate their impacts at specific plants. In addition, as a precautionary measure for all plants, DEP increased staffing levels, sandbagged vulnerable areas of the plants and reviewed the detailed shut down and evacuation plans prior to the storm in order to be prepared to evacuate if necessary and to protect plant equipment to prevent longer term damage. DEP also tested emergency generators and topped off all generators with fuel prior to the storm. Since bypassing or discharge of untreated wastewater did not occur throughout the entire system, this report is divided into two categories – 1. Bypass and/or Upset, and 2. Other Incidents. The amounts (MG) provided are approximate, and were estimated based on average dry weather flows at the relevant plants.

1. WWTPs with Bypass and/or Upset

North River

LOCATION: North River
RECEIVING WATERBODY: Hudson River
EVENT TYPE: Raw Sewage Bypass mixed with CSO

START	ENDING
TIME: 11:00 PM	TIME: 1:00 AM
DATE: 10/29/2012	DATE: 10/31/2012

AMOUNT: 83 MG
Due to the total loss of utility power, the North River WWTP was shut down from 11:00 PM on October 29, 2012 through 6:00 AM on October 30, 2012 due to flooding of the lower level in close proximity to the electric substation that was de-energized to prevent short circuit danger to personnel and equipment. Flood waters came through the expansion joints in the floor and through a regulator manhole; they came within inches of the top of the protective berm surrounding the substation at approximately +8.0 El. Included with the flooded lower level was the main sewage pump (MSP) drywell which was flooded in its entirety (approximately 47-50 ft of water).

Once flooding subsided and pumping of the drywell commenced, it was decided that a single MSP, MSP No. 3, would be sacrificed in that the running of a submerged pump is destructive to the pump bearings. Once the drywell was pumped out, temporary emergency lighting was used to allow personnel to begin restoring the main sewage pumps. MSP No. 1 was repacked and placed into service along with MSP No.3. MSP No. 2 was then repacked. MSPs No. 4 and MSP No. 5 required additional repair due to failure of the backstops.

Operation with only one MSP occurred from 6:00 AM on October 30, 2012 through 1:00 AM on October 31, 2012. During that period, there was no loss of secondary treatment or disinfection. The total amount of sewage bypassed from October 29, 2012 to October 31, 2012 was 83 MG.

26 Ward

LOCATION: 26th Ward
RECEIVING WATERBODY: Hendrix Creek
EVENT TYPE: Secondary Treatment Reduction

START	ENDING
TIME: 10:15 PM	TIME: 3:30 PM
DATE: 10/29/2012	DATE: 10/30/2012

AMOUNT: 89 MG
On October 29, 2012 at 5:10 PM, there was a Con Ed feeder failure, and at 6:00 PM power was cut by DEP to the thickener building/chlorine building MCC and the dewatering building to

protect them from surging flood waters from Hendrix Creek. The hypo gravity feed was activated at this time. The blowers were cut out at 10:15 PM due to a breaker trip.

On Tuesday morning, October 30, 2012 at 2:15 AM, DEP cut power to the middle station (RAS pumps, WAS pumps, secondary bypass gate) to minimize damage from flooding waters. Upon trying to reenergize, the secondary bypass gate transformer blew, causing the gate to shut, so the plant throttled the influent to 128 MGD to avoid a secondary system washout. The Con Ed feeder was available at 3:30 AM. The hypo pumps were restored at 5:30 AM and the hypo drip was taken out of service. Although power was restored to the dewatering building, the hoppers were full of cake so dewatering operations had to remain off. The main gates were fully opened at 1:10 PM, blowers were restored at 3:30 PM and the secondary bypass gate, RAS and WAS pumps were back online at 4:00 PM. At 4:00 AM on October 31st, the dewatering building received cake trucks to unload the hoppers, and was able to resume operations.

Coney Island

LOCATION: Coney Island
RECEIVING WATERBODY: Jamaica Bay

EVENT TYPE: Raw Sewage Bypass mixed with CSO
START ENDING
TIME: 6:40 PM TIME: 3:20 PM
DATE: 10/29/2012 DATE: 11/2/12
AMOUNT: 213 MG

EVENT TYPE: Secondary Treatment Reduction
START ENDING
TIME: 11:00 PM TIME: 4:15 PM
DATE: 10/29/2012 DATE: 10/31/12
AMOUNT: 284 MG

On October 29, 2012 at 8:50 AM, the Paerdegat influent gates were throttled due to high elevation in the outfall chamber caused by high tide elevation from Hurricane Sandy, and due to the shutdown of the 72-inch outfall for reconstruction work. As DEC was notified prior to the storm, planned contract work required the shutdown of the 72-inch outfall, which restricted the wet weather flow to 202 MGD, less than two times design dry weather flow (220 MGD). However, the plant could only pump a maximum of 155 MGD at this time due to a hydraulic head difference of only one foot at the outfall weir due to the storm surge. When tide elevations decreased, which increased the hydraulic head difference, the plant increased pumping to 165 MGD to maintain the one foot difference. At 4:15 PM, the plant temporarily lost power to the blowers and screens, but these were brought back online within 10 minutes. At 6:10 PM, Shell Bank Creek breached the bulkhead of the plant property.

By 6:40 PM, the Paerdegat Influent Gates were closed completely because the plant could not keep up with the increase in incoming flow without running the risk of flooding the outfall chamber and other parts of the plant, equipment and compromising the safety of plant personnel.

Only the Coney Island Influent Gates were open fully as it is a sanitary only system (Paerdegat is a combined sewer system). The plant attempted to pump more flow rather than throttling the Coney Island Interceptor, reaching flows of 192 MGD. However, the chlorine contact tanks flooded out and flooded into the thickener gallery for Thickeners No. 1 and No. 2. The Coney Island Interceptor screens were rapidly getting clogged with large and heavy debris that included wooden boards, large metal pieces, and rocks. The plant had sewage treatment workers (STWs) manually cleaning the screens to try to keep up with incoming debris. At 8:55 PM, three Con Ed Feeders tripped out, which caused the blowers to trip out. All three Coney Island Interceptor Bar Screens were heavily matted despite manual cleaning, and the flow to the wet well was minimal.

Water from Shell Bank Creek started flowing into the main plant buildings, including the 27 KV substation, at 9:00 PM. The water level in the parking lot of the Administration Building was 3-4 feet deep. Shortly thereafter, the plant chief ordered the plant shut down to protect plant personnel and electrical equipment. The 27 KV feeders were cut out of service and all electrical power was automatically cut off to the plant. Power was automatically cut to the bar screens and the lighting in the screening chamber. Safety of plant personnel was a concern and the STWs were pulled from the screening chamber. All Coney Island Interceptor Influent Gates were closed as they were fully clogged, and to prevent the Coney Island Interceptor channels from flooding out the screening chamber. The plant was shut down from 9:00 PM to 11:00 PM.

Once the water started to recede from the main plant buildings by 11:00 PM, the plant started putting the 27 KV Feeders back into service. The plant cut in MSPs No. 3, 4, and 6, and Bar Screens No. 1 and 2 on the Coney Island Interceptor. However, the Coney Island Interceptor influent gates were throttled at 70% when opened. The Paerdegat Interceptor influent gates remained closed. The hypo pumps, primary settling tanks, primary sludge pumps, and waste sludge pumps were cut into service.

On October 30, 2012 at 12:30 AM, the plant cut in Feeder 10B68. Primary Sludge Pump No. 9 did not start and as a result the Primary Settling Tank No. 6 was closed and taken out of service. Con Edison put stop tags on Feeder 10B61 and 10B62 at 5:50 AM. By 3:00 PM, the plant was pumping 165 MGD, all from the Coney Island Interceptor, and was unable to pump more due to risk of flooding at the plant's outfall weir. Con Edison came to the plant to apply the stop tag to Feeder 10B65 and removed the stop tag for Feeder 10B62 at 8:30 PM.

The plant attempted to cut in two process air blowers by 9:10 PM but Con Edison took down the Sheepshead Bay grid and the plant lost all feeders. The plant put NL4 (feeder line) on engine power to supply Unit Substation No. 1B and closed the bus tie on Unit Substation No. 1. The plant cut in No. 1 Engine Generator in addition to No. 2 and No.3 Engine Generators, which had already been running as part of normal operations. The plant put NL2 and NL3 on engine power. The plant restarted all primary sludge pumps, primary tanks, final tanks, thickener pumps, No. 5 and No. 8 effluent recycle pumps, No. 1 and No. 4 Waste Sludge Pumps, and a boiler. At 11:50 PM, the Coney Island Interceptor Influent Gates were 100% open. The Paerdegat Influent Gates remain closed. The plant began opening the Paerdegat Interceptor Influent Gates to 3-5% open on October 31, 2012 at 12:10 AM and by Friday November 2, 2012 at 3:20 PM, the Paerdegat Interceptor influent gates were fully open.

It is estimated that 213 MG of raw sewage was bypassed during the storm event from the Paerdegat Interceptor.

The blowers were returned to service at 4:15 PM on October 31, 2012 after Con Ed restored their feeders to service. During the time period when the blowers were out of service, 284 MG of flow did not receive secondary treatment.

Newtown Creek

LOCATION: Newtown Creek
RECEIVING WATERBODY: East River
EVENT TYPE: Raw Sewage Bypass mixed with CSO

START	ENDING
TIME: 10:12 PM	TIME: 11:28 PM
DATE: 10/29/2012	DATE: 10/30/2012

AMOUNT: 143 MG

Newtown Creek Plant

During the afternoon of October 29, 2012 Con Ed notified DEP that it intended to power down the electrical system in lower Manhattan. At around 5:00 PM the turbine generators were started at both the Newtown Creek WWTP (NC Plant) and the Manhattan Pump Station (MPS). The NC Plant had one feeder out of service for construction and around 5:00 PM a second feeder was taken out by Con Ed, leaving the plant with two feeders. A portion of the plant was left on utility power while the rest was transferred to turbine power.

The large storm surge at Newtown Creek, from 7:00 to 9:00 PM, caused most of the roads surrounding the plant to completely flood. The plant pumped up to 680 MGD during the storm. During the highest surge the overflow from the chlorine contact tanks (CCT's) to the outfall was submerged and the open air channel was within 6 inches of spilling to the nearby street. There were no major failures of equipment during the storm.

The plant continued to operate with a combination of turbines and utility power for three days, through November 1, 2012. At around 3:50 PM on November 1, 2012, the two turbines in service tripped and at that time the entire plant was transferred back to utility power. Several hours later a flood of the old thickener gallery was discovered. The entire gallery had flooded with more than 5 ft of liquid with evidence of continuous flow until wasting was shut down. The gallery had lines which routed WAS to the centrifuge feed well and it also contained WAS grinders. The lines were isolated and portable pumps were installed within the gallery to pump out WAS that was believed to be leaking from an interim pipe. The failure of the WAS line may have been related to the sudden power outage that had occurred several hours earlier. The sudden shutdown of all the WAS pumps may have caused a water hammer that damaged the pipe. On November 2, 2012, some of the new pipes for conveyance of WAS that have not yet been commissioned were placed into service to resume limited wasting from the North and Central Batteries. The South Battery was placed offline. Work continued to complete

commissioning of new WAS lines and by November 6, 2012, all the new pipes were in service and the South Battery was placed back into service.

Manhattan Pump Station

As noted above, during the afternoon of October 29, 2012 Con Ed notified DEP that utility feeders in lower Manhattan would be de-energized prior to the forecasted storm surge, so the pump station was transferred to turbine power at approximately 5:00 PM. At approximately 5:45 PM, all six feeders at MPS were taken off line by Con Ed. The pump station continued to operate on turbine power during the storm surge. That surge completely surrounded the pump station building with floodwaters, including up to two feet of water in the courtyard area above the underground fuel oil storage tanks. At approximately 10:12 PM the pump station lost both turbines. The pump station ceased pumping and the influent gates and throttling gates were closed. The black start generator and one of the turbines were started by 12:09 AM on October 30, 2012. At that time it was discovered that the pump dry well had flooded with more than 20 feet of water. In addition, the screening chamber and wet well had also flooded. The MSPs could not be started and water continued to enter the dry well. At that time the source of water to the dry well was not readily apparent.

Upon inspection of the dry well during the morning of October 30, 2012 it was determined that flow was emanating from the steam/fire protection room which is directly above the forebay. The dry well sump pumps had also failed due to flooding. Contractors were mobilized to assist with pumping out of flooded areas, electrical repairs, repairs to the fuel tank system, and maintenance of the turbines and black start generator. Portable pumps were installed in the steam/FP room and, after several hours of pumping, the room was entered and the source of sewer water was blocked off. The contractors then proceeded to install seven submersible pumps in the dry well and started pumping out the dry well by 12:00 PM, October 30, 2012.

The flooded dry well contained Bentley Nevada electrical control panels associated with pump monitoring systems. The plant electricians tested and bypassed all electrical lines going down to the flooded area. They also tested the cone check controls. The first MSP was started on October 30, 2012 around 7:17 PM and after 25 minutes the pump was shut down because the influent gate Tridents would not open. One of the influent gates was damaged during an attempt to manually raise the gate by portable hydraulic power pack. The electricians worked on cleaning and drying the flooded Trident panels for the other three gates and were able to open one influent gate and place one bar screen into service at around 11:22 PM. On October 30, 2012, 11:28 PM MSP No. 1 was started with the dry well still flooded.

By 9:00 AM, October 31, 2012, the dry well had been pumped down to a level of 1 ft. above the bottom floor elevation. A second bar screen channel was placed in service. MSP No. 2 was started 11:15 AM. By 11:50 AM, MSP No. 2, MSP No. 3, and MSP No. 5 were in service. By 2:25 PM all influent gates and throttling gates were opened. The total amount bypassed was 143 MG.

By November 1, 2012 the permanent sump pumps had been repaired and the dry well was cleaned and completely empty. A third channel was placed into service after the PLC was reset for one of the influent gates. The pump station continued to operate on turbine power.

On November 2, 2012, at approximately 7:23 AM the turbines tripped. All influent gates were closed and Turbine No. 2 was started by 8:10 AM. MSP No. 2 started pumping around 8:29 AM and MSP No. 5 started at 8:41 AM. By 8:46 AM, Turbine No. 1 was also in service. There was no bypass detected during this period. The influent gates were all fully opened by 9:49 am. At approximately 5:30 PM, five utility feeders were energized and the pump station was transferred to Con Ed power.

Tallman Island

LOCATION: Tallman Island
RECEIVING WATERBODY: East River
EVENT TYPE: Raw Sewage Bypass mixed with CSO

START	ENDING
TIME: 11:20 PM	TIME: 1:45 AM
DATE: 10/29/2012	DATE: 10/30/2012

AMOUNT: 7.5 MG
During the hurricane on October 29, 2012, the Feeder B breaker opened and could not hold closed at 11:20 PM, and only half of the plant was then operating on Feeder A. At this time, the MSP engines and blower engines went out of service and the main influent gate closed. Plant personnel attempted to close the tie breaker to provide power to the entire plant via Feeder A however due to a tie breaker malfunction, it could not close. At 12:12 AM, plant personnel were able to close the tie breaker and started the pump engines, open the influent gates and start the bar screens. Approximately 7 MG bypassed during this time.

In addition, when we lost Feeder B, the Powell's Cove pumps shut down. The operator manually initiated shutting of the Powell's Cove main gate. When power was reestablished, the operator was able to only partially open the main gate. He attempted to free the gate by closing it and then opening it. In doing so, the main gate remained closed. The operators were able to pump open the gate at approximately 1:45 am and reestablish pumping. Approximately 0.5 MG was bypassed during this time.

Rockaway

LOCATION: Rockaway
RECEIVING WATERBODY: Jamaica Bay

EVENT TYPE: Raw Sewage Bypass mixed with CSO

START	ENDING
TIME: 8:15 PM	TIME: 2:28 AM
DATE: 10/29/2012	DATE: 11/01/2012

AMOUNT: 36 MG

EVENT TYPE: Secondary Treatment Reduction

START	ENDING
TIME: 2:28 PM	TIME: Ongoing
DATE: 11/01/2012	DATE: Ongoing

AMOUNT: 165 MG

Due to severe flooding and unsafe conditions on October 29, 2012 caused by Hurricane Sandy, at 8:15 PM the Rockaway WWTP was shut down due to water overtaking the tunnels, galleries and sump pumps. The plant never stopped feeding hypo to the effluent; the emergency hypo drip always remained in service. The plant lost all utility power due to the storm and the pump and blower building was running on emergency generators. The plant remained offline until November 1, 2012 when submersible pumps were installed in the channels to pump the influent water while the main sewage pumps were being inspected and repaired after being submerged by sea water. On November 2, 2012, there were two Godwin pumps rated for 10 MGD each that were installed in the screening channel that were pumping. As of November 2, 2012, all flow was receiving primary treatment and disinfection. Currently the plant is on generator power and one feeder and all flow is being pumped by the plant's Main Sewage Pumps with the Godwin pumps installed as a backup. The process air blowers remain out of service at the plant, therefore secondary treatment has not yet resumed.

Oakwood Beach

LOCATION: Oakwood Beach
RECEIVING WATERBODY: Lower Bay
EVENT TYPE: Secondary Treatment Reduction

START	ENDING
TIME: 7:45 PM	TIME: 10:55 AM
DATE:10/29/2012	DATE: 11/2/2012

AMOUNT: 237.5 MG

Oakwood Beach experienced significant flooding during Hurricane Sandy and was effectively cut off from the rest of Staten Island. However, the WWTP continued to pump and provide disinfection to all flow during and after the storm. Blowers tripped offline as the electrical system became unstable on Monday, October 29, 2012 at 7:45 PM and remained offline until it was restored at 10:55 AM on Friday, November 2, 2012. The reliability of the one electrical feeder that remained in service was questionable. There were a few attempts to place a blower in service but it tripped out every time due to voltage dips. Therefore, there were concerns that if the attempts to place a blower persisted, the Feeder could be lost since the power grid in Staten Island was in a very precarious situation due to the effects of the hurricane. That scenario would have placed the Plant at even greater risk. After electrical reliability improved, the MSPs were operated on the emergency generator system and the blowers were placed in service using utility power.

During the period when the blowers were out of service, all flow through Oakwood Beach was not receiving secondary treatment. Total flows not receiving secondary treatment from the time blowers were out of service to the time they were restored were 237.5 MG.

Port Richmond
LOCATION: Port Richmond
RECEIVING WATERBODY: Kill van Kull
EVENT TYPE: Secondary Treatment Reduction

START	ENDING
TIME: 10:00 PM	TIME: 8:30 PM
DATE:10/29/2012	DATE: 10/30/2012

AMOUNT: 30 MG
On Monday, October 29, 2012, the Port Richmond WWTP was experiencing high flows due to Hurricane Sandy. At 10:00 PM, the emergency generator was cut into service. The plant went off Con Ed due to feeders at the Arthur Kill Substation being under water. At this time the blowers were taken offline. Con Ed power was restored to the plant at 7:00 PM on Tuesday, October 30, 2012 and the blowers were brought back online at 8:30 PM. Throughout the storm, the plant maintained chlorination and the influent gates were not throttled. The approximate amount of flow that did not receive full secondary treatment is 30 MG. The secondary bypass gate was opened while the plant was at the maximum wet weather flow.

2. Other Incidents

Wards Island
The Wards Island WWTP operations were not adversely affected during Hurricane Sandy. Plant pumping was not changed or reduced during the hurricane event. On Monday, October 29, 2012 when plant flows were high, the secondary bypass gate was opened in accordance with the wet weather operating plan to prevent flooding to the building. The plant throttled at 5:15 PM on October 29, 2012 with a starting flow of 510 MGD to prevent flooding to the lower level and damage to equipment. Due to power interruptions there were brief periods in which the RAS pumps and blowers did not operate. However these issues were immediately resolved by operations personnel. For a short period of time on Monday, October 29, 2012, from 10:00 PM to 11:15 PM, Wards Island had to operate on the gravity feed disinfection system because the sodium hypochlorite dilution system was inundated with water from storm surges.
During this period, there was no loss of secondary treatment or disinfection.

Hunts Point
To prevent flooding to the plant, on Monday, October 29, 2012, the plant throttled its gates at 5:15 PM with a starting flow of 410 MGD, greater than two times design dry weather flow (400 MGD), until 2:16 AM on October 30, 2012. Due to Con Ed voltage dips that tripped out the

VFDs, Hunts Point also experienced multiple short term stops to its Main Sewage Pumps. As a result, the plant throttled the influent gates to prevent flooding in accordance with the WWOP. The screening channels and influent gate controls were compromised due to mechanical and electrical issues and the resulting pumped volumes were reduced in accordance with the WWOP.

Owls Head

The Owls Head WWTP pumped two times design dry weather flow (240 MGD) during most of the duration of Hurricane Sandy. Owls Head had to throttle its gates starting Monday, October 29, 2012 at 4:30 PM and ending at 12:00 AM on October 30, 2012. Due to utility power outages, the Main Sewage Pumps tripped out of service for short periods of time. During these power outages, the flow dropped temporarily below two times design dry weather flow. The plant operated on the gravity feed system for disinfection during the storm event as the hypo building and pumps were submerged due to the storm surge. During this period, there was no loss of secondary treatment or disinfection.

Bowery Bay

The Bowery Bay WWTP operations were not adversely affected during Hurricane Sandy. Bowery Bay did not reduce its pumping during the hurricane and was able to treat more than two times design dry weather flow and there was no treatment reduction. Throughout the day on Monday October 29, 2012, there were power dips which affected some equipment which was then promptly reset to be put back into service. The chlorine contact tanks received some amount of flooding due to the storm surge conditions during high tide and the flow rates for 7:00 PM to 12:00 AM had to be estimated.

WWTP	Pump Station Name	Type	DWF (MGD)	Station Went Offline	Station Back Online	Duration (HH:MM)	Estimated Bypass Amount (MG)	Comments
HP	Conner St.	combined	4.26	10/31/12 10:30 AM	10/31/12 5:20 PM	6:50	1.21	Pumping was restored with Godwin pumps
HP	Ely Ave.	sanitary	0.41	10/29/12 9:30 PM	10/29/12 11:30 PM	2:00	0.03	Pumping was restored when ConEd breaker and tie were reset
HP	Orchard Beach	sanitary	0.10	10/31/12 10:00 AM	11/1/12 3:00 PM	29:00	0.12	Pumping was restored with generator power
HP	Zerega Ave.	sanitary	0.47	10/29/12 9:00 PM	10/30/12 9:00 AM	12:00	0.23	Pumping was restored with generator power.
					HUNTS POINT DRAINAGE AREA TOTAL:		**1.60**	
OH	Bush Terminal	combined	0.80	10/29/12 7:40 PM	11/2/12 9:00 AM	85:20	2.84	Installed a hydraulic pump around
OH	2nd Ave.	combined	0.60	10/29/12 6:24 PM	10/31/12 1:45 PM	43:21	1.08	Installed a hydraulic pump around
					OWLS HEAD DRAINAGE AREA TOTAL:		**3.93**	
NCM	Canal St.	sanitary	0.31	10/29/12 8:30 PM	10/31/12 3:00 PM	42:30	0.55	
NCQ	49th St.	sanitary	0.28	10/29/12 6:49 PM	11/2/12 12:00 PM	89:11	1.04	Installed a hydraulic pump around
					NEWTOWN CREEK DRAINAGE AREA TOTAL:		**1.59**	
RH	Van Brunt St.	combined	0.45	10/29/12 8:30 PM	11/2/12 5:25 PM	92:55	1.74	Installed a hydraulic pump around and then went on generator power
RH	Gowanus	combined	9.51	10/30/12 6:30 AM	10/31/12 3:25 PM	32:55	13.04	Installed a generator
RH	Nevins St.	combined	0.54	10/29/12 7:22 PM	10/31/12 1:45 PM	42:23	0.95	Installed a hydraulic pump around
					RED HOOK DRAINAGE AREA TOTAL:		**15.74**	
JA	Rosedale	sanitary	2.50	10/29/12 8:45 PM	11/1/12 2:00 PM	65:15	6.80	Installed a generator
JA	Howard Beach	combined	17.60	10/29/12 8:00 PM	10/30/12 12:23 PM	16:23	12.01	Installed a generator
JA	Warnerville	sanitary	0.03	10/29/12 8:30 PM	11/1/12 4:45 PM	68:15	0.09	Installed a generator
					JAMAICA DRAINAGE AREA TOTAL:		**18.90**	
TI	Doug Bay	sanitary	0.07	10/30/12 3:15AM	11/1/12 11:15 PM	69:00	0.20	Installed a generator
TI	Little Neck	sanitary	0.26	10/29/12 6:00 PM	10/30/12 3:45 PM	21:45	0.24	Installed a generator
					TALLMAN ISLAND DRAINAGE AREA TOTAL:		**0.44**	
BB	Roosevelt Is. South	sanitary	0.43	10/29/12 8:30 PM	10/31/12 1:45 PM	41:15	0.74	Installed a generator
BB	Roosevelt Is. North	sanitary	0.40	10/29/12 8:30 PM	11/1/12 5:15 PM	68:45	1.15	Installed a generator
					BOWERY BAY DRAINAGE AREA TOTAL:		**1.88**	
RK	Broad Channel	sanitary	0.27	10/29/12 8:30 PM	11/1/12 2:00 PM	65:30	0.74	Installed a hydraulic pump around
RK	Nameoke Ave.	combined	4.00	10/29/12 8:49 PM	11/1/12 1:00 PM	64:11	10.70	Installed a generator
RK	Bayswater Ave.	sanitary	0.42	10/29/12 8:09 PM	11/3/12 3:00 PM	114:51	2.01	Initially pumped directly into bay, then went on generator power
RK	Seagirt Ave.	sanitary	1.92	10/29/12 8:30 PM	11/1/12 1:00 PM	64:30	5.16	Installed a hydraulic pump around and then went on generator power
					*****ROCKAWAY DRAINAGE AREA TOTAL:**		**18.60**	***Rockaway pump stations bypassed volume was included in WWTP total***
OB	South Beach	sanitary	0.36	10/29/12 7:44 PM	11/2/12 12:15 AM	52:31	0.79	Installed a hydraulic pump around
OB	Mason Ave.	sanitary	0.91	10/29/12 8:30 PM	11/2/12 5:00 PM	92:30	3.51	Installed a hydraulic pump around and then went on generator power
OB	Richmond Hill Rd.	sanitary	1.82	10/29/12 11:26 PM	11/2/12 10:00 PM	94:34	7.17	
OB	Mark St.	sanitary	0.02	10/29/12 8:30 PM	11/1/12 7:00 PM	70:30	0.06	Installed a generator
					OAKWOOD BEACH DRAINAGE AREA TOTAL:		**11.53**	
PR	Nautilus Court	combined	0.48	10/29/12 8:30 PM	11/2/12 5:00 PM	92:30	1.85	Installed a generator
PR	Hannah St.	combined	14.40	10/30/12 12:24 AM	10/31/12 12:00 PM	35:36	21.36	Returned to Con Ed power
PR	Melvin Ave.	sanitary	0.14	10/29/12 8:30 PM	11/1/12 4:00 PM	67:30	0.39	Installed a hydraulic pump around
PR	Cannon Ave.	sanitary	0.06	10/29/12 8:30 PM	11/1/12 4:00 PM	67:30	0.17	Installed a generator
					PORT RICHMOND DRAINAGE AREA TOTAL:		**23.77**	

NOTES:

1. Some of the times reported above are approximate.
2. Estimated Bypass Amounts reported above are Raw Sewage Bypasses mixed with CSO and are based on average dry weather flow.
3. Please note the following pump stations remain on generator power at this time: Van Brunt St, Rosedale, Howard Beach, Roosevelt Island South, Roosevelt Island North, Nameoke Ave, Bayswater Ave, Mason Ave, Nautilus Court, and Conner Street (partially on generator).
4. Please note the following pump stations remain on hydraulic pump around at this time: Bush Terminal, 2nd Ave, 49th St, Nevins St, Seagirt Ave and South Beach.